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THE IMPROVEMENT IN HANDWRITING OF FEEBLE-MINDED CHILDREN

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This study of the handwriting of feeble-minded children was made at the Massachusetts School for the Feeble Minded at Waverley. The plan of the study involved the following features: First, the collation of samples of each year's handwriting by means of carbon copies; these copies were secured by tracing the original manuscripts conserved among the official records at Waverley; secondly, the comparison of each year's writing with a standard scale—that of Dr. Leonard P. Ayres, director of the Department of Education of the Russell Sage Foundation; this comparison was made for the purpose of judging the various samples for improvement in legibility; thirdly, the observation of the samples of writing for indication of improved motor control, or its opposite; fourthly, the evaluation of the quality of each series of samples of handwriting in comparison with the handwriting of normal children.

The study was begun in April, 1913. Through the courtesy of Dr. Walter E. Fernald, superintendent of the institution at Waverly records of the school, covering several years, were made available for inspection and study.

The first case taken up was that of a girl. This patient entered the institution in October, 1906, at twelve years of age. The school record of this girl at the time that she entered the school at Waverley is herewith given. Statements concerning her record during the school year ending in June, 1912, and for an intermediate year, 1907, are also given. They are direct copies of the official records. They show what the girl was observed to be doing in various phases of activity at Waverley. They also afford some means for estimating the amount of motor control exercised in work other than that of handwriting.

Other cases observed were those pertaining to the records of two boys. Samples of the writing of a third boy also were taken.

In the last case, however, copies of the school records were not made.

The records of the first case are given in some detail so as to show how the material collected exhibited the girl's development.

Case No. I. Female, Date of birth, February 21, 1894.

Entered Waverley October 1, 1906.

AYRES' SCALE, Sample of writing rated 40%.

The appearance of Rep,

Girl's Writing

(1906)

we have no trouble

(1907)

Eunice

AYRES' SCALE, Sample of writing rated 50%.

His school was a low building

(1908)

Eunice

(1909)

When the green woods

AYRES' SCALE, Sample of writing rated 60%.

He entered the house

(1910)

A good many years ago

(1911)

fired at Fort Sum

AYRES' SCALE, Sample of writing rated 70%.

his boy called city

(1912)

Eunice M

(This sample shows some deterioration in skill)

MASSACHUSETTS SCHOOL FOR THE FEEBLE MINDED.

SCHOOL RECORD.

Entrance test

Date Oct. 1906

born

Name, Case No. 1 Age. 12 yrs. (Feb. 21, 1894) No.

Reading, Reads very well in third reader.

Articulation, Good with exception of st's in wrists.

Spelling, Spells words like straight, company, piano, through and fails on toward, manual, etc.

Language, Fair English- plain- clear- coherent- some descriptive power.

Drawing, Some idea of plain forms. Draws a square and circle without model.

Writing, Large, clear, fine.

Letter Boxes,

Cutting, Good, straight, but not absolutely on line.

Number, Adds and subtracts to 20. Adds simple sums. Sub. by borrowing; knows mult. tables.

Geography, Very little idea of physical features.

Time-telling, Tells time to a minute.

Object and Nature Study,

Deportment, Quiet and industrious so far.

Remarks, Giggles in a nervous, senseless way without real reason. Quiet and obedient and means well. Touch, hearing, sight, taste, and smell good. Good discrimination of odors. Knows all colors and shades. Left eye has a spot on the iris, reaching from the pupil to the eye-ball. Badly shaped head,—very full forehead with hornlike protuberances (small) sloping face, toward chin. Very easily frustrated.

MASSACHUSETTS SCHOOL FOR THE FEEBLE MINDED.

SCHOOL RECORD.

Date June, 1907

born

Name, Case No. 1	Age. 13	(Feb. 21, 1894) No.
Reading,	Has joined first class in History Reading. Reads pretty well after conquering new geographical words: Comprehends to a considerable extent.	
Articulation,	Good loud voice.	
Spelling,	Knows many words on first dozen pages of Rat. Speller, No. 2.	
Language,	Expresses herself clearly in good, plain English, often with common grammatical errors. Her scope of ideas is small & she talks of foolish, childish things.	
Drawing,	Learning to measure in inches. Cannot yet draw a strictly accurate 4 in. checkerboard, tho. approximates closely. Drawn and painted U.S. flag.	
Writing,	Large bold and clear; letters not uniform and some tilt back, some upright, some slant forward, but all very plain and clear.	
Letter Boxes,		
Cutting,	Bungling on curved lines; trying to do a little free-hand work, difficult.	
Number,		
Geography,	Knows the common physical features, as hills, slopes, valleys, mountains, brooks, rivers, etc. gathered from walks on the grounds, from charts and stories.	
Time-telling,	Tells time.	
Object and Nature Study,	Enjoys object lessons; ideas increased & knowledge gained from Cabinet objects.	
Deportment,	Quiet, occupies herself; orderly.	
Remarks,	Still makes foolish, silly remarks and giggles senselessly; makes effort to overcome when reproved; a hydrocephalic case; good disposition, persevering, not easily discouraged; tries again and again to accomplish a desired result after repeated failures. Does not see parts of things clearly; many struggles over the inch and 1/2 inch lines. If she does not understand (and she grasps things slowly) goes off into a little giggling fluster.	

MASSACHUSETTS SCHOOL FOR THE FEEBLE MINDED.

SCHOOL RECORD.

Date June, 1912

born

Name, Case No. 1 Age. 18 yrs. (Feb. 21, 1894) No.

Reading, Reads at sight almost anything, intelligently and expressively. U.S. History, Frye's Geog. (4th Readers).

Articulation, Normal, clear, ringing tones.

Spelling, Many new and difficult words from lessons; enjoys definitions.

Language, Forceful and to the point; clearly and vigorously expressed; good use of grammar when careful.

Drawing, Improves all the time; has learned to tone down color very much more; careful in detail & has done work requiring fine coördination.

Writing, Writes beautifully, full, free, and bold. Firm and controlled, round curves most smoothly; all work painstaking.

Letter Boxes,

Cutting,

Number,

Geography, Interested greatly in Frye's Geog. and reads to "remember," commenting most delightfully and comprehendingly on the subject matter.

Time-telling, Time-telling perfect.

Object and Nature Study,

Deportment, The dearest girl! the most helpful, womanly, and dependable; such an amazing gain in

Remarks, self-respect, trustworthiness and reliability since two or three of the northwest girls were graduated last June. Puts everything away in perfect order. Is my right-hand assistant; industrious, studious, quiet, and responsible.

RÉSUMÉ FROM THE FOUR CASES MENTIONED ABOVE

I. IMPROVEMENT IN LEGIBILITY

Case No. 1 improved in legibility, as shown by comparison with Ayres's scale, from 40 per cent in 1906 to 60 per cent in 1911 and 1912. A gain of 20 per cent in six years' time.

Case No. 2 improved in legibility, as shown by comparison with Ayres's scale, from 30 per cent in 1906 to 80 per cent in 1912. A gain of 50 per cent in six years' time.

Case No. 3 improved in legibility, as shown by comparison with Ayres's scale, from 20 per cent in 1905 to 60 per cent in 1912. A gain of 40 per cent in seven years' time.

Case No. 4 improved in legibility, as shown by comparison with Ayres's scale, from a poorer 50 per cent grade to a better appearing 50 per cent grade. The improvement is not equal to a complete step in Ayres's scale. However, the test covers, in this case, only one year in time.

II. IMPROVEMENT IN MOTOR CONTROL

There is improvement in motor control which is evident in the progressive years for each subject observed; but even in the handwriting, showing the largest improvement, the hand of the child is still unsteady, and perfect letters are made but infrequently and show laborious effort.

Case No. 2 shows perhaps the greatest improvement in motor control.

III. COMPARISON WITH THE HANDWRITING OF NORMAL CHILDREN

The scale used for grading the papers for legibility was evolved from the handwriting of normal children. The comparison brought out the fact that normal children manifest irregularities in the formation of letters, quite similar to those made by defective children (see especially sample No. 30 of Ayres's scale).

In some instances the quality of the writing of the feeble-minded children is only a little below that of the writing of normal children in the public schools, but it has in general taken a longer time to reach a similar grade of attainment.

ADDITIONAL DATA

In order to verify the conclusion relative to improvement in legibility, further study of the handwriting of children in the institution at Waverley was undertaken in May, 1914. Special thanks are due Dr. Fernald and Miss Elizabeth Moulton, who made this second investigation possible by giving access to the records.

Twenty-three cases were examined and the results obtained are given in Table I.

TABLE I

Case No.	Date of First Sample	Rated according to Ayres's Scale	Date of Second Sample	No. of Years Involved in Comparison	Rated according to Ayres's Scale	Improvement
		Per cent			Per cent	Per cent
1.....	1909	50	1914	5	60	10
2.....	1910	40	1913	3	60	20
3.....	1910	30	1913	3	70	40
4.....	1908	40	1913	5	60	20
5.....	1909	60	1913	5	50	-10
6.....	1911	50	1914	3	50	0
7.....	1906	30	1913	8	70	40
8.....	1911	70	1914	3	70	0
9.....	1909	30	1914	5	50	20
10.....	1910	30	1914	4	60	30
11.....	1911	60	1914	3	50	-10
12.....	1909	30	1913	4	50	20
13.....	1909	50	1913	4	50	0
14.....	1909	20	1913	4	40	20
15.....	1911	40	1914	3	60	20
16.....	1910	30	1914	4	50	20
17.....	1910	60	1914	4	60	0
18.....	1911	30	1914	3	50	20
19.....	1911	30	1914	3	50	20
20.....	1908	30	1913	7	60	30
21.....	1909	20	1914	5	60	40
22.....	1909	20	1914	5	50	30
23.....	1912	40	1914	2	60	20

Two cases, Nos. 5 and 11, show each a loss in legibility of 10 per cent. The other twenty-one cases either remain the same in quality of legibility, or show an actual gain. Including the four cases which remain the same in legibility, the twenty-one cases mentioned give the following facts:

Number of cases	21
Average number of years from which the samples are taken in each case	5
Average amount of improvement in legibility in each case	20 per cent

CASE No. 7.

June, 1906.
cane cane cane

June, 1907
Lillian Erer

June, 1908
mamma baby

June, 1909
much to study

June, 1910
drill bill bill

June, 1911
be clean?

June, 1912
month of roses

June, 1913
rain sinks

Excerpts from the series of samples of case No. 7 herewith given cover a period of eight years. They are copied from the original records by tracing over sheets of carbon paper.

SUMMARY

1. This study shows the extent to which children adjudged to be feeble-minded may improve in legibility of handwriting, if given adequate training.

2. Some cases do not improve at all, although they receive careful training; other cases show deterioration in the quality of their handwriting, and in motor control. In general, after an

average of five years of training the improvement in handwriting averaged 20 per cent, as judged by the Ayres scale.

3. In this study a standard scale for judging handwriting has been found to be useful in discovering comparative relations between degrees of quality of the legibility of handwriting.

The study further shows that specimens of the handwriting of children extending over a series of consecutive years are useful in determining improvement in legibility of handwriting by individuals. This fact suggests that permanent, accumulative records of normal children in public or private schools should also be conserved to show improvement in studies.